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## **DRAFT EAST AFRICAN STANDARD**

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**Steel refuse bins — Specification**

**EAST AFRICAN COMMUNITY**

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## Foreword

Development of the East African Standards has been necessitated by the need for harmonizing requirements governing quality of products and services in the East African Community. It is envisaged that through harmonized standardization, trade barriers that are encountered when goods and services are exchanged within the Community will be removed.

The Community has established an East African Standards Committee (EASC) mandated to develop and issue East African Standards (EAS). The Committee is composed of representatives of the National Standards Bodies in Partner States, together with the representatives from the public and private sector organizations in the community.

East African Standards are developed through Technical Committees that are representative of key stakeholders including government, academia, consumer groups, private sector and other interested parties. Draft East African Standards are circulated to stakeholders through the National Standards Bodies in the Partner States. The comments received are discussed and incorporated before finalization of standards, in accordance with the Principles and procedures for development of East African Standards.

East African Standards are subject to review, to keep pace with technological advances. Users of the East African Standards are therefore expected to ensure that they always have the latest versions of the standards they are implementing.

The committee responsible for this document is Technical Committee EASC/TC 035, *Steel and steel products*

Attention is drawn to the possibility that some of the elements of this document may be subject of patent rights. EAC shall not be held responsible for identifying any or all such patent rights.

## Steel refuse bins — Specification

### 1 Scope

This Working Draft East African Standard specifies requirements, sampling and test methods for steel refuse bins with removable lids and maximum capacity of 85 L.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods*

ISO 3575, *Continuous hot-dip zinc-coated and zinc-iron alloy-coated carbon steel sheet of commercial and drawing qualities*

ISO 4998, *Steel sheet, zinc-coated and zinc-iron alloy-coated by the continuous hot-dip process, of structural quality*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org>

#### 3.1 defective

bin or lid that fails in one or more respects to comply with the appropriate requirements of the specification

#### 3.2 lot

at least 10 and not more than 8 000 items (each item comprising a bin complete with lid) or not more than 8 000 bins or lids (if these are supplied separately), of the same size, from one manufacturer, submitted at any one time for inspection and testing refuse household and other refuse, excluding hot ashes and live coals

#### 3.3 refuse bin

a container designed for temporary holding of rubbish and waste materials before disposal.

## **4 Requirements**

### **4.1 Material requirements**

#### **4.1.1 Steel**

All plates, hoops, handles, rivets, and weld metal used in the construction of bins and lids shall be of steel of the appropriate thickness specified.

#### **4.1.2 Coating**

Steel refuse bins and lids shall be coated to protect it from corrosion. When a zinc coating is used, its composition of the zinc used in the coating of the bins and lids shall be such as to allow the bins and lids to comply with the requirements of 4.3.6.

### **4.2 Size and dimensions**

#### **4.2.1 Size**

The bins shall have a nominal capacity of 85 L or less, as specified by the purchaser.

#### **4.2.2 Shape and dimension of bins and lids**

The shape and dimensions of finished bins and lids should be according to Annex A. Other shapes and dimensions are produced according to agreements between producer and purchaser.

#### **4.2.3 Dimensions of handles for bins and lids**

The dimensions of the finished lid and bin handles should conform to Annex A. The cross-section of the grip portion of the bin handles shall be circular and that of the lid handles rectangular.

#### **4.2.4 Thickness of plates**

The thicknesses of the plates (prior to coating) used in the manufacture of the lid, the side, and bottom of bins, and for the bottom reinforcing hoops should conform to Annex A.

### **4.3 Construction**

#### **4.3.1 Seams**

Seams shall be manufactured by a process that prevents leakage of liquids.

### 4.3.2 Nesting

Each bin shall have a positive stop (such as afforded by the handles) that is such that when two bins of the same size are nested together and are then inverted, the inner bin falls out under its own weight.

### 4.3.3 Workmanship

The internal surfaces of the bin shall not be corrugated and shall be free from surface irregularities of depth or height exceeding 2 mm (other than those caused by the markings required in terms of section 4, by rivet heads, by seams, and by the rolled projection specified in 4.3.1).

### 4.3.4 Finish

Each bin and lid shall be completely covered by a zinc coating that complies with the requirements of ISO 1461, ISO 3575 or ISO 4998 for zinc coatings.

## 4.4 Strength

### 4.4.1 Rigidity of the bottom

After a bin has been tested in accordance with 6.2, the clearance between the bottom of the bin and the plane of the lower edge of the bottom reinforcing hoop shall be at least 8 mm.

### 4.4.2 Resistance to edge drops

After a bin has been tested in accordance with 6.3:

- a) when the sand is removed and the bin is half-filled with water, the rate of any leakage of the water shall not exceed half a litre in 2 min; and
- b) there shall be no fracture of weld or plate metal other than cracks in welds that extend across less than 10 % of the greatest length of the weld or across 3 mm, whichever is the lesser.

### 4.4.3 Strength of handles

When a bin is tested in accordance with 5.3, the handles may become bent but there shall be no fracture of a weld or tearing of the parent metal.

## 5 Test methods

### 5.1 Rigidity of the bottom

5.1.1 Measure the clearance between the bottom of the bin and the plane of the lower edge of the bottom reinforcing hoop. Load the bin with sand to the appropriate of the following masses:

**Table 1 — Test methods for the rigidity of bin bottom**

S/N	Bin size	Gross mass
	L	kg
i.	85	90±1
ii.	57	60±1

**5.1.2** Secure the lid in place and drop the bin, in a vertical position from a height of  $300 \text{ mm} \pm 10 \text{ mm}$ , ten times onto a steel plate (of thickness at least 12 mm and width at least 500 mm) that is superimposed on a plane concrete slab of thickness at least 75 mm. Between drops make good sand lost during the previous drop. After ten drops re-measure the clearance between the bottom of the bin and the plane of the lower edge of the bottom hoop.

## **5.2 Resistance to edge drops**

Re-load the bin as per 5.1 and so secure the lid on the bin so as to minimize the sand lost in the test. Raise the bin by one handle so that the lowest point of the bottom hoop is  $1\ 050 \text{ mm} \pm 15 \text{ mm}$  above the plate and allow the bin to drop, but prevent the bin from falling over onto either of its handles after contact with the plate. Repeat the drop using the other handle, and continue dropping the bin from alternate handles until a total of six drops has been made, making good, between drops, sand lost during the previous drop. Then remove the sand from the bin, examine it for compliance with 4.4.2(b) and fill it, to half its nominal capacity, with water and check for compliance with 4.4.2(a).

## **5.3 Test for strength of handles**

### **5.3.1 Bin handles**

After subjecting the bin to the tests given in 5.1 and 5.2, secure it (empty) in an upright position and so drop a flat-bottomed mass of 9 kg from a height of  $300 \text{ mm} \pm 10 \text{ mm}$  that it strikes the centre of the grip portion of one handle of the bin. Invert the bin and secure it in the upside-down position and drop the mass onto the same handle in a similar manner as before. Repeat the above drops until a total of 14 drops has been applied, 7 in each direction, to one handle. Repeat the test on the other bin handle, and then examine the bin and handles for compliance with 4.4.3.

### **5.3.2 Lid handles**

Secure the lid, standing on the lower edge of its skirt, with the handle horizontal. Then, drop the mass used in 5.3.1 from the same height that it strikes the edge of the grip portion of the handle. Rotate the lid and repeat the drop onto the other edge of the grip of the handle. Repeat the above drops until a total of 8 drops has been applied, 4 to each edge of the handle, and then examine the handle and lid for compliance with 4.4.3.

### **5.3.3 Tests for zinc coating**

After subjecting a bin to the tests given in 5.1, 5.2, and 5.3, cut specimens from the side and bottom of the bin and from the lid, and use the relevant methods given in ISO 1461, ISO 3575 or ISO 4998 to test for compliance with 4.3.6.

## **6 Marking**

Each steel refuse bin and lid shall be indelibly and legibly marked with the following information:

- a) trademark, name or symbol identifying the manufacturer;
- b) capacity in litres;
- c) steel grade used to manufacture the refuse bin; and
- d) dimensions.

## **7 Inspection, sampling and compliance**

### **7.1 Inspection**

Each item sampled in accordance with 7.2 and 7.3 shall be visually examined and measured for compliance with all the relevant requirements with which compliance is not assessed by testing.

NOTE Sampled item means bin and/or lid.

### **7.2 Sampling**

This sampling plan, as per Table 5, shall be used for inspection and testing before acceptance or rejection of single lots (consignments). It shall also be used in cases of dispute.

The following sampling procedure shall be applied in determining whether a lot meets the requirements of the specification. The samples so taken shall be deemed to represent the lot for the respective properties.

From the lot taken at random, the number of items, or bins, or lids (as relevant), shown in columns 2 and 3 of Table 4 relative to the appropriate lot size shown in column 1.

NOTE The sample for testing may be taken from the inspection sample after it has been inspected.

### **7.3 Compliance**

The lot shall be deemed to comply with the requirements of this specification, if after inspection and testing of the samples taken in accordance with 7.2, the numbers of defectives found do not exceed the corresponding acceptance numbers shown in columns 4 and 5 respectively of Table 5.

**Table 1 — Lot size and sample size**

1	2	3	4	5
Lot size Item, bins, or lids <sup>a</sup>	Sample size Items, bins, or lids <sup>a</sup>		Acceptance number	
	For inspection	For testing	For inspection	For testing
10-65	2	1	0	0
66-110	3	2	0	0
111-180	5	2	0	0
181-300	7	3	1	1
301-500	10	3	1	1
501-800	15	3	1	1
801-1300	25	4	2	1
1301-3200	35	4	2	1
3201-8000	50	5	3	2
<sup>a</sup> As relevant				

## 8 Order information

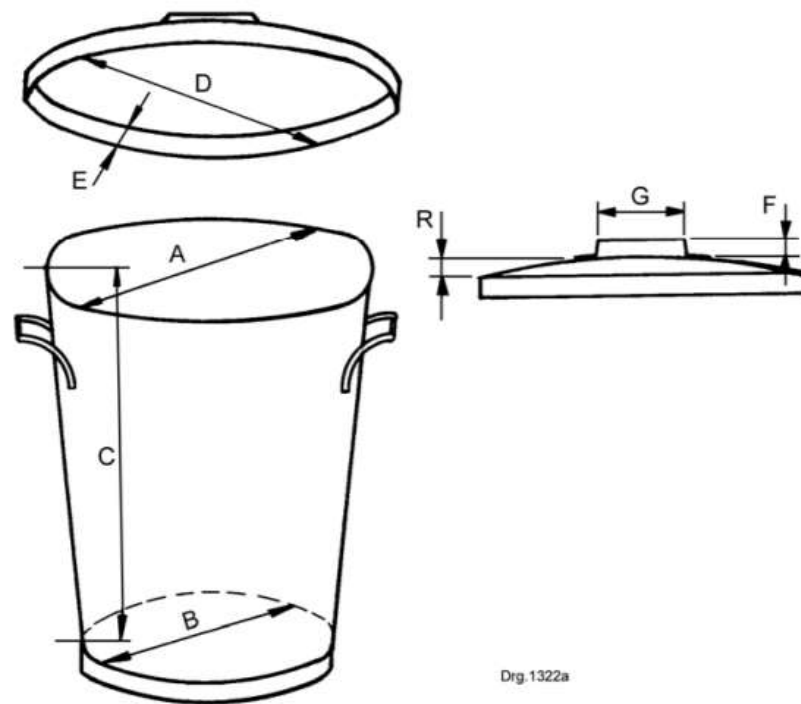
The following information shall be specified in the order or contract for steel refuse bins:

- a) the size and shape (refer 4.2.1 and 4.2.2),
- b) marking requirements (refer to 6); and
- c) type and grade steel used to manufacture the refuse bin.

## Annex A (informative)

### Shapes, sizes and dimensions of steel refuse bins

**A.1 Example designs of bins and lids including shape, dimensions and tolerances are illustrated in Figures 1, 2, 3, and 4.**



**Figure 1: Dimensions of a round shape steel refuse bin and lid**

**Table A.2: Dimensions of bins and lids (with coating), see Figure 1**

Dimensions in millilitres

1	2	3	4	5	6	7
Bin size L	Bin dimensions			Lid dimensions		
	Top internal diameter	Bottom internal diameter	Internal depth	Internal diameter	Internal depth of skirt	Height of doming R, min.
	A	B	C <sup>a</sup>	D <sup>b</sup>	E <sup>c</sup>	
85	455±4	394±4	610±7	495±6	40	13
57	428±4	362±4	460±7	483±6	45	13

<sup>a</sup>Measured vertically between the top of the bin and a point on the bottom 7 mm away from the side wall.  
<sup>b</sup>If a closer fitting lid is required, a lid of the dimensions specified for the 57 L bin should be used.

°Measured at a position 15 mm away from the inner face of the skirt.

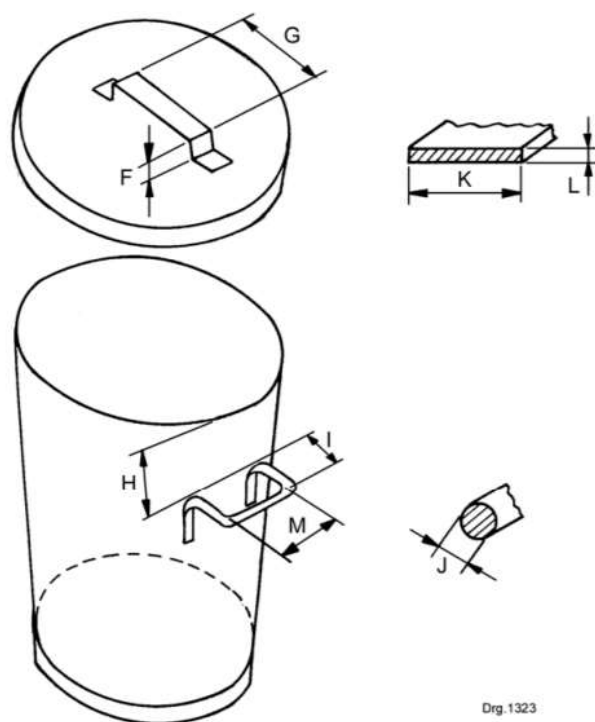


Figure 1: Handle dimensions for steel refuse bins and lid

Table A.3: Dimensions of handles and of bins and lids (with coating), see Figure 2

Dimensions in millilitres

1	2	3	4	5	6	7	8	9	10
Bin size  L	Bin handles						Lid handles		
	Clear distance to top of bin H		Clearene between handle and side bin I, min.	Length of straight portion of grip M, min.	Diameter of grip portion J, min.	Clearence between handle and top of lid F, min.	Length of straight portion of grip G, min	Grip portion	
	max.	min.						Width K, min.	Thickness L, min.
85	185	178	50	100	8	30	95	19	2.0
57	140	133	50	100	8	30	95	19	2.0

Dimensions in millimetres

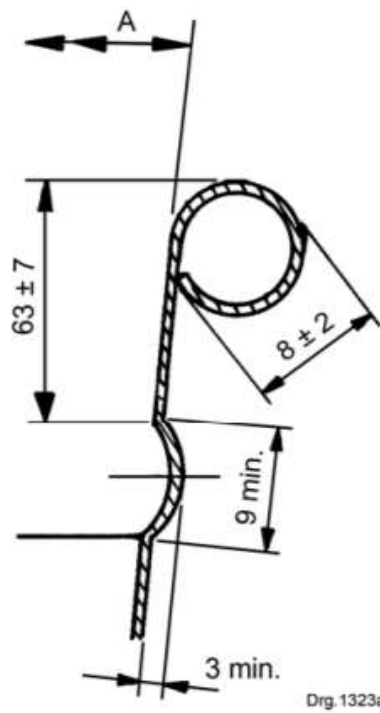


Figure 2

A.2 There shall be one seam only in the side-wall and the seam between the side and bottom of the bin shall not extend above the upper edge of the bottom hoop by more than 13 mm (Refer to Figure 4).

Dimensions in millimetres

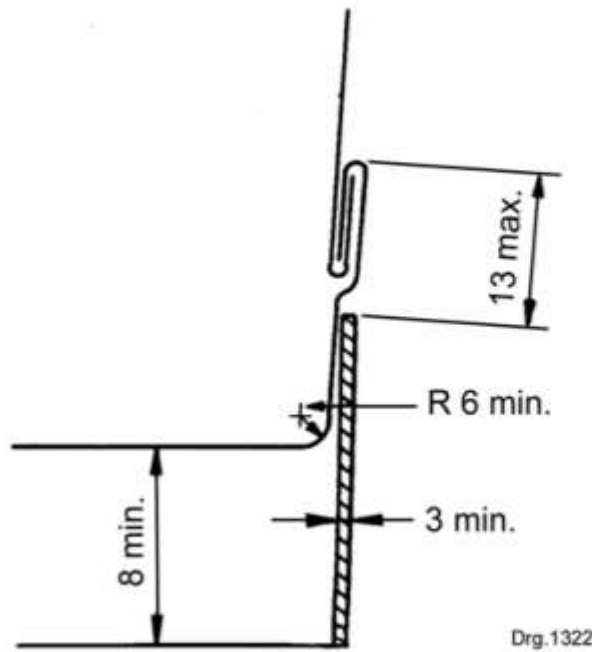


Figure 3: Seam on sidewall

A.3 Thickness of plates before coating should be according to Table 3

Table A.4: Thickness of plate (prior to coating)

1	2	3	4	5
Bin	Plate thickness			
Size	mm, min.			
L	Bin side	Bin bottom	Bottom reinforcing hoop	Lid
85	1.00	1.20	3.00	0.80
57	0.80	1.00	3.00	0.80

#### A.4 Upper part of the bin

The rim of bins should have a bead, of external diameter  $8 \text{ mm} \pm 2 \text{ mm}$  that is such that after the zinc coating has been applied, the width of the gap between the bead and the side of the bin does not exceed 1 mm. There should be a projection rolled in the side of the bin below the bead, positioned and of the dimensions as shown in Figure 3. The handles shall be diametrically opposite to each other to within 15 mm.

#### A.5 Bottom (refer to Figure 4)

The radius of curvature of the bottom (where it meets the side) should be at least 6 mm. The bottom should have a reinforcing hoop whose ends are joined by welding. The hoop (and its attachment to the bin) should be such that the lower edge of the hoop does not deviate from plane by more than 5 mm and that the clearance between the bottom of the bin and the plane of the lower edge of the hoop is at least 8 mm.

#### **A.6 Lids**

The lid should be made of one piece of sheet to which the handle is secured. The edge of the skirt should have a bead, of external diameter  $8 \text{ mm} \pm 2 \text{ mm}$  that is such that, after the zinc coating has been applied, the width of the gap between the bead and the surface of the skirt does not exceed 1 mm.

## Bibliography

- [1] RS 505: 2023, *Steel refuse bins — Specification*
- [2] IS 1495:1970 *Mild steel dustbins*
- [3] SANS 32/EN 10240 *Internal and/or external protective coatings for steel tubes – Specification for hot dip galvanized coatings applied in automatic plants*

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